

March 16, 1886.

Prof. W. H. Flower, LL.D., F.R.S., President, in the Chair.

Mr. F. D. Godman, F.R.S., exhibited a series of examples of a Butterfly, *Danais plexippus*, from various localities, and made remarks on its distribution, which seemed to be gradually extending itself all over the world.

Professor Bell stated that the species of *Balanoglossus*, an imperfect example of which he had exhibited to the Society on November the 17th of last year, had been described and named by M. R. Koehler, who had called it *B. sarniensis*¹; the specimen on which his description was based had also come from the island of Herm. Since the reading of that description, M. G. Pouchet² had reported to the Academy of Sciences that the species in question had been found at various localities on the northern and north-western coasts of France.

The following papers were read:—

1. On new Genera and Species of *Endomychidæ*.
By the Rev. H. S. GORHAM, F.Z.S., F.E.S.

[Received March 5, 1886.]

(Plate XVII.)

The object of the following descriptions is to make known several most interesting and beautiful Coleoptera of the family *Endomychidæ* from various sources, but which are chiefly due to Mr. George Lewis's collections made in Ceylon in 1882-3. A portion, however, are species that have been long known to me, as they are based on specimens collected by Mr. Bates on the Amazons. Of these there were mostly but one or two of each species, and it would no doubt have been satisfactory to have seen more examples; of this, however, there seems but slender hope, while if left undescribed the specimens are practically lost. Two or three most interesting species, forming a new genus, are from examples in Mr. Cowan's Madagascar collection; for the opportunity of describing these my thanks are due to Dr. Sharp.

SPATHOMELES.

1. SPATHOMELES INFLATUS. (Plate XVII. fig. 5.)

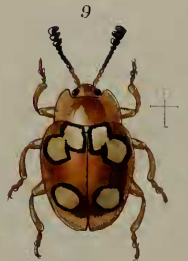
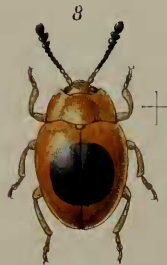
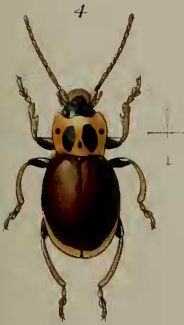
Oblongus, niger, nitidus; clytris piceo-purpurascens, marginibus nigris, humeris calloso-inflatis. Long. 10 millim. ♀?

Hab. Ceylon.*

Head, antennæ, legs, prothorax, and underside shining black.

¹ Comptes Rendus, cii. (25 Jan. 1886) p. 224.

² L. c. p. 272.



Head with a few scattered but distinct punctures; club of the antennæ rather lax and dull. Thorax shining, not punctured, but with the surface uneven; anterior margin deeply excavated for the head, and with the anterior angles turned inwards; the sides much rounded in front; the disk with a short central elongate impression, and a round one on each side; the sides much puckered. Elytra smooth and waxy, impunctate; all the disk of a pitchy-purple tint, which in life was, as Mr. Lewis informs me, of a most beautiful violaceous colour. They have a double, not much elevated, tumidity each side of the scutellum. The humeral callus is much inflated, to the extent of about a quarter of the length of the elytra; this tumidity is scarcely carinate and not spinose; the reflexed margin of the elytra is complete, running as a fine line beneath the callus up to the basal angle; the epipleural fold is black and shining. The anterior tibiæ are very faintly incurved, and compressed into a shallow spoon-shaped hollow at their apices, and the middle pair are more strongly incurved at their tips, the hind pair slightly so; all the tibiæ have the apices pubescent inwardly; the hair at the tips is golden.

Of this very singular and beautiful *Spathomeles* a pair were beaten off a dead branch in the jungle by Mr. Lewis at Dickoya, at 5000 feet elevation.

2. SPATHOMELES ORNATUS.

S. decorato valde affinis, oblongus, niger, nitidus; elytris subviolaceis, maculis tribus elevatis, una basilari rotundata, una ante medium transversa in medio constricta, una subapicali sub-lunulata, luteis. Long. 13-15 millim. ♂ ♀.

Mas. Elytris spina dorsali brevi obtusa, femoribus anticis, tibiis mediis ante apicem dentatis, tibiis posticis ante medium angulariter late dentatis.

Hab. Assam.

Very closely allied to *S. decoratus*, Gerst., and perhaps not more than a geographical form; the evident toothing of the hind tibiæ is, however, very important, and the union of the two middle yellow spots, which in *S. decoratus* are, so far as I have observed, always separate, seems to point to a permanent specific difference. The spots are all rather more developed than in *S. decoratus*; the basal one is round.

One male and two female specimens.

STICTOMELA, gen. nov.

Corpus ovatum. Elytris convexis, maris hinc spinulosis. Prothorax antice ampliato-rotundus. Prosternum apice truncatum, coxas anticas superans. Mandibulæ apice bidentatæ. Palpi maxillares articulo ultimo conoideo apice minute truncato.

A genus very nearly approaching *Spathomeles*; the points in which it principally differs are, that in the males the elytra are not armed with a spine, and the prothorax is differently shaped, resembling more that of the *Amphisterni* of the second section without

spines. The apex of the prosternum is not so widely rounded but submucronate. The apex of the jaws is notched, much as in *Encymon* and *Engonius*, the teeth being of equal length and the exterior one not bifid. The front tibiæ of the males have a very small tooth near their apex. *Engonius*, to which this genus approaches in some of its characters, has the apex of the elytra obliquely truncate, so that they are open at the sutural angle; in the present genus the elytra are together uniformly rounded.

1. STICTOMELA CHRYSOMELOIDES. (Plate XVII. fig. 6.)

Oblonga, elytris apice æqualiter rotundatis, nigro-ænea, nitida; capite prothoraceque inæqualibus, crebre sat fortiter punctatis, hoc profunde canaliculato; elytris crebrius subtiliter punctatis, perobsolete subsulcatis, callo humerali modice elevato, obtuse carinato, punctisque quatuor aurantiacis, duobus basalibus, duobus subapicalibus, oblique positis. Long. 9 millim. ♂ ♀.

Mas. *Tibiis anticis ad apicem intus excisis, intermediis leviter curvatis, apice mucronatis.*

Hab. Dickoya, Ceylon.

Head brassy black, a little shining; epistoma thickly and strongly punctured, posterior part less thickly; antennæ as in *Spathomeles*, but the club rather lax, apical joint obliquely compressed at the tips. Thorax with the surface shining but uneven, the principal impression being a central channel with a punctiform pit on each side in the middle, a basal transverse line, and the ordinary basal sulci; the sides are, however, wrinkled; the lateral margins are much rounded in front, and the front margin rather deeply excavated and bisinuate, the front angles being acute. The humeral callus is raised into a blunt carina, terminating in the external one of two basal, orange, round spots; the two apical ones are placed somewhat obliquely, that nearest the suture being furthest from the apex, and oblong but irregular in shape. The femora are clavate and distinctly punctured; the tibiæ are bent a little in both sexes, but more strongly so in the male, and in that sex terminate inwardly in a short mucro; they are pubescent at the tips. The tarsi and claws are pitchy, clothed with golden pile beneath. The intercoxal plate of the basal ventral segment is sparsely but deeply punctate.

Four specimens, three males and one female, of this beautiful species were captured by Mr. Lewis.

2. STICTOMELA OPULENTA.

Oblonga, nitida, nigra; elytris confertim crebrius punctatis, singulis maculis sex rubris, tribus basalibus, tribus subapicalibus irregularibus, quasi fasciam formantibus. Long. 10 millim. ♂.

Mas. *Tibiis anticis dente parvo adjacente, juxta apicem infra dentem excisis; segmento apicali ventrali, tuberculo instructo.*

Hab. Ceylon.

Head strongly and deeply punctured, the epistoma especially so, with fewer and more scattered punctures; antennæ as in *Engonius*, but with the club a little more lax. Thorax uneven but shining,

with a marginal line round the entire edge uniting with the central channel in front; front margin deeply bisinuate; sides hardly so much rounded in front as in *S. chrysomeloides*. Elytra longer than in that species, thickly and distinctly punctured, hardly any trace of sulcation or striation; shoulders with a callus well raised, ending in a deep red spot, another spot near the scutellum, and a third between these two; posteriorly are two small oblong spots (united in the specimen described) near the suture about one third from the apex, and another between these and the margin. There is a fine sutural stria for the whole length of the elytra, and the margin is narrowly reflexed. Legs and underside shining black; femora punctate, but more finely than in *S. chrysomeloides*; anterior pair in the male compressed at the tip and with a very small fine calcar above the spatulate compression. The tubercle on the apical ventral segment is squarish and impressed on its top so as to seem faintly bidentate.

A single male specimen is all that Mr. Lewis secured of this species.

CYMONES.

Characteres plerumque ut in genere Encymon; differt mesosterno haud transverso, prothoracis basi medio vix marginato, sulco transverso nullo, antennarum clava elongata, laxè articulata, articulis nono et decimo vix latioribus, maris tibiæ anticarum dente lato.

I have no doubt that the species for which I propose this new genus is the Madagascar representative of *Encymon*, with which it is associated in the form of the mandibles. It has, however, a different facies, principally owing to the form of the pronotum, which is more convex, with its margins even and scarcely at all reflexed. The longitudinal basal sulci are present, but the transverse one is quite obsolete. The mode of toothing of the front tibia of the male is, moreover, quite different to that of *Encymon*; in the only species of that genus in which I have seen it take place, and which is figured by me (*Endom. Recitati*, tab. f. 10), the tooth is small and close to the apex; here it is wide and strong and near the middle of the tibia.

1. CYMONES SHARPI. (Plate XVII. fig. 4.)

Piceus; prothorace elytrorumque apicibus flavis, illo guttis duabus magnis oblongis, punctisque tribus parvis nigris, capite femoribusque saturatius nigro-piceis; trochanteribus, femoribus basi, tibiis tarsisque ferrugineo-flavis. Long. 9 millim. ♂.

Mas. Tibiis anticis dente basi latissimo, apice acuto infra medium, tibiis intermediis et posticis apice leviter incurvatis.

Hab. Madagascar, Betsileo (*Cowan*).

Head black, mouth and palpi testaceous, epistoma with a few indistinct punctures, crown smooth, antennal orbits raised. Antennæ piceous, rufo-piceous at the base; the proportion of the joints as in *Encymon* till the ninth, which with the tenth and apical joints are elongate, only rather longer and more widened at their tips than

those preceding them. Thorax about as long as wide if the projecting front angles are taken in, widest a little below the front; basal angles right angles, sides a little sinuate not angular, front margin rounded and a little prominent, basal margin nearly straight; on the disk, which is very even and smooth, are two large inky-black oblong marks a little obliquely placed, a small dot on each side where the thorax is widest, and one in the middle, near the base. Elytra pitchy, inclining to brown, the apex is yellow, and this colour returns some way up the suture and the margins; they are convex, evenly ovate, and rounded at the apex, narrower at the base, and with a very obsolete sutural stria and scarcely at all widened margin; the epipleural fold is yellow. There is no visible punctuation on their surface; but it is not glabrous as in *Encymon angulatus*, but very finely alutaceous, though the sculpture is hardly visible at all.

Only two specimens of this insect have come under my notice; both are males. One is in Mr. Lewis's collection, and the other in Dr. Sharp's, by whom they were obtained from Mr. Cowan.

2. CYMONES COWANI. (Plate XVII. fig. 1.)

Nigro-subviolaceus; capite, prothorace, antennis (clava excepta) pedibusque rufis, abdomine rufo-piceo. Long. 6½ millim. ♂ ♀.

Mas. Tibiis anticis dente acuto distante mediano, apicibus intermediis etiam leviter incurvatis.

Hab. Madagascar (Cowan).

More parallel than *C. sharpi*, and with the thorax not so convex above, and more quadrate, smaller, and differently coloured. The head and thorax are rusty red, very little shining, and without punctuation; palpi red; antennæ of moderate length, and with the club, which is black, abrupt, and with its two first joints transversely heart-shaped. The thorax is transversely quadrate, with the front angles a little prominent, the sides a little sinuate, nearly straight, base obsoletely margined, and the sulci distinct but not deep. Elytra dark blackish purple, their apex ferruginous, slightly shining but not bright. Legs in the male example pitchy, in the female clear rusty red.

Although this species and the following one differ in several particulars of their structure from *C. sharpi*, I have not been able to find any characters of sufficient importance to warrant their separation generically. In the abruptly formed club of the antennæ and in the form of the thorax these two species are nearer to *Encymon*, but the strongly toothed tibiæ in the male, and the form of the body, less swollen, and with its sides more parallel than in any eastern species of that genus, indicate a radical divergence from that type.

Only two specimens have come under my notice; they were obligingly placed in my hands by Dr. Sharp for description.

3. CYMONES HELOPIOIDES. (Plate XVII. fig. 3, ♂.)

Niger; parum nitidus; prothorace transversim quadrato, cum elytris subopacis. Long. 6½-7 millim. ♂ ♀.

Mas. *Tibiis anticis dente acuto, adjacente, infra medium; intermediis apice incurvato, posticis leviter sinuatis.*

Hab. Madagascar (Cowan).

Entirely black, subopaque above, body beneath shining. Antennæ rather short, a little longer in the male than in the female, their club not very wide nor abrupt; head rather uneven, with a few scattered obsolete punctures. Thorax half as wide again as long, opaque; punctuation very obsolete, minute and scarcely visible, basal sulci distinct; front angles very little produced, scarcely at all in the female, sides nearly straight, base finely margined. Elytra half as wide again as the thorax and slightly widened behind, callus only faintly raised. The male specimen has two minute red dots near the apex of the elytra, in the female they are wanting. Metasternum (in male) depressed between the hind coxæ, and first ventral segment with scattered small punctures.

Two specimens from Dr. Sharp's collection.

ANIDRYTUS, Gerst.

1. ANIDRYTUS QUADRIPUNCTATUS.

Oblongus, parum ovatus, rufo-piceus, nitidus, crebre subobsolete punctatus, cupreo-pubescentis; antennis nigris, articulis quatuor basalibus et apice summo rufis; prothorace punctis quatuor discoidalibus nigris. Long. 8 millim. ♀.

Hab. Brazil, Blumenau.

Head finely punctured, a little rugulose between the eyes; basal and three following joints of the antennæ pale ferruginous, the fourth joint being deeper in colour, and at its articulation with the third nearly black. Thorax just twice as long as wide, from the front angles the sides are very evenly rounded to near the base, where they become straight. The basal furrows are two distinctly impressed, converging, linear channels; within them, where they end on the front of the disk, halfway between the base and the front margins, are two round black points (as in *A. bipunctatus*); more in front and more widely apart are two other black points. The disk and sides of the thorax are evenly, thickly, not confluent punctured, but the surface of the black spots is smooth, or in the external spots with one or two punctures only. The elytra are somewhat parallel, not strongly convex, evenly and more thickly punctured; the punctures are (as is usual where they give rise to hairs) not pricked in, but irregular, somewhat linear, and flat-bottomed. Legs clear red, only a very little darkened at the base of the tibiæ. The underside wholly ferruginous red.

Although this appears to be a species very nearly allied to *A. bipunctatus*, Gerst. (a species also from Brazil), the description given above will show that it differs not only by the four black spots of the thorax, but by the colour of the underside and legs as well.

I have only seen one specimen, a female, which was sent to me by Herr Reitter, with other Coleoptera collected in the same district.

2. ANIDRYTUS LIQUEFACTUS, Gorch. Endom. Rec. p. 47.

I have received specimens of both sexes of what I consider identical with this species, of which the type is now in Mr. Lewis's possession from Peru, and one male from New Granada (?); but these have only *three* joints at the base of the antennæ red, and the apical joint is quite black. The size is from $7\frac{1}{2}$ – $8\frac{1}{2}$ millim.

3. ANIDRYTUS HUMILIS, Gorch. Endom. Rec. p. 48.

Further specimens were taken by Mr. Belt at Chontales, Nicaragua, and will be noticed in the 'Biologia Centr.-Amer.' in due course.

EPOPTERUS.

1. EPOPTERUS EGANUS. (Plate XVII. fig. 9.)

Ovatus, rufo-brunneus, nitidus; antennis nigris, articulis tribus basalibus testaceis; elytris singulis maculis tribus sat magnis eburneo-albidis nigro-cinctis, duabus basalibus oblique sitis, una subapicali. Long. 5–5½ millim. ♂ ♀.

Mas. *Tibiis anticis leviter curvatis, ad apices compressis.*

Hab. Amazon, Ega (*H. W. Bates*).

Head and thorax rather pale castaneous red, not perceptibly punctured, very finely and very sparsely pubescent at the sides of the latter, narrowed to the front angles, and very narrowly margined; basal sulci short, linear. Scutellum black. Elytra wider than the thorax, commencing to widen from the base to about one third from the base, whence they are evenly and ovally contracted to the apex; each with three large yellowish-white spots edged with black. The underside is brownish red, the tibiæ darker at their bases than the rest of the leg, as are also (but only very finely) the inner epipleural margins of the elytra.

Two examples from Mr. Bates's collection are now in Mr. Lewis's.

2. EPOPTERUS EPHIPPIGER. (Plate XVII. fig. 8.)

Ovatus, rufo-piceus, nitidus; elytris flavis macula magna discoidali communi nigra; antennis nigris, articulis tribus basalibus flavis; prothorace crebre, elytris parcius leviter punctatis. Long. 6 millim. ♂.

Mas. *Tibiis anticis ad apices interne compressis, leviter incurvatis.*

Hab. Amazon (*H. W. Bates*).

Nearly of the same oval form and of the size of *E. eganus*, but distinctly punctured. Head red, nearly smooth; thorax twice as wide as long, not so wide as the elytra at their base, thickly and distinctly punctured; basal sulci straight, a little converging, sides narrowing, slightly curved, margin distinct and faintly raised. Scutellum rufous, punctured. Elytra paler yellow than the thorax, punctures distinct, only a few scattered hairs at the sides; epipleuræ yellow, only very narrowly darker at their margins. Underside and legs uniformly pithy red.

I have only seen one example of this species, a male. It is very distinct from any *Epopterus* yet described.

3. EPOPTERUS LINEOGUTTATUS. (Plate XVII. fig. 7.)

Ovatus, rufo-piceus, nitidus; elytris pallide flavis, sutura marginibusque lateralibus piceis, puncto humerali, lineolisque septem in singulis, 3, 3, 1, saturate piceis; antennis nigris, articulis tribus basalibus rufis. Long. 6 millim. ♂.

Mas. *Tibiis anticis interne sat fortiter incurvatis, ad apicem compressis.*

Hab. Amazon (*H. W. Bates*).

Head, thorax, underside, and margins of the elytra rather light pitchy red; punctuation of the thorax and elytra as in *E. ephippiger*, distinct. The curious marking of the elytra consists of a humeral small dot, two elongate dashes near the suture, two shorter ones in the middle of the disk, two still smaller near the margin above the middle, and one small one near the apex. These dashes are not placed regularly, but the three near the base form a sort of fascia, as do the three below the middle. The scutellum is pitchy black.

One small example.

SAULA, Gerst.

1. SAULA NIGRIPES, Gerst. Mon. p. 224, t. 3. f. 2.

Several specimens met with by Mr. Lewis, two of which were found in *copulâ*, present no appreciable distinction between the sexes.

STENOTARSUS.

1. STENOTARSUS VALLATUS, Gerst. Mon. p. 342.

Four specimens which I identify with this species were obtained by Mr. Lewis in Ceylon at Dickoya. The antennæ are clear red; the series of punctures are more regular and not so coarse as in *S. russatus*.

2. STENOTARSUS RUSSATUS, Gorh. Trans. Ent. Soc. 1874, p. 446.

One specimen met with by Mr. Lewis fully confirms my opinion as to the distinctness of this species, and I would only remark, in addition to the characters already given, that the raised thoracic margin has its surface distinctly flat in both species, indeed the edges of this margin are themselves raised, so that concave is the correct term. The dark, stout, and gradually thickened antennæ will easily prevent this being confounded with *S. vallatus*.

3. STENOTARSUS SICARIUS.

Ater, valde convexus, pubescens; elytris basi thorace latioribus, distincte punctato-striatis; thoracis margine laterali deplanato, haud bene elevato, antrorsum subito latiore. Long. 3 millim.

Hab. Ceylon (*Lewis*).

At once distinguished from any other *Stenotarsus* known to me by its entirely black colour. It is allied to *S. vallatus* and *S. russatus*; but the form is different, the elytra suddenly widening from

the shoulder, and the thorax having the base narrower with the hind angles right angles, so that the insect is not so uniformly round as in its allies. The antennæ are formed much as in *S. vallatus*, the second to eighth joints being short and bead-shaped, but longer than wide, the club strong but laxly jointed, the apical joint quadrate and much (fully twice) wider than the ninth. The thorax is wider than long, narrowed to the front angles, but with its sides nearly straight in the basal two thirds; its flattened margin has its internal edge deeply impressed in front, where the flat part is widest, and it appears raised at the base only, where the disk is widely sulcate; the disk is convex, minutely but distinctly covered with small points, but the puncturing is much obscured by coarse floccose pubescence.

Only one specimen of this interesting species was obtained.

PANOMŒA.

1. PANOMŒA CINGALENSIS. (Plate XVII. fig. 2.)

Rufa-testacea; capite et thorace basi piceis; antennarum clava, articulo basali externe, scutello, sutura elytrisque maculis quinque sat magnis nigris; antennis articulis decem. Long. 5 millim.

Hab. Ceylon, Hadley (*Lewis*).

Antennæ ten-jointed, the basal joint is stout, a little curved, the second is scarcely longer than broad, and the third is apparently longer than usual, and is possibly really composed of the third and fourth joints together, but I can see no suture; the fourth to the seventh very short, club lax, the eighth and ninth joints rather trigonal. Head pitchy, smooth; eyes coarsely granulate (as in typical *Panomœa*). Thorax as in *P. pardalina*, but anterior angles rather more prominent, scarcely punctured, but a little uneven at the sides, finely margined, except at the middle of the base. Elytra more cordate than in other species, and viewed sideways rising to a point so as to appear more gibbous than in its allies, finely but closely punctured, with five largish black spots—one humeral, two near the suture, one marginal (larger than the others), one subapical; this last in one example connected with the marginal one; the underside and legs are deep ferruginous red.

Five or six examples were obtained.

ENDOCELUS, n. g.

Mr. Lewis has met with a very curious small beetle in Ceylon, which apparently comes very near *Panomœa*, which itself is synonymous with *Cyclotoma* of Mulsant, and of which a short description will be sufficient to render its identification certain. The antennæ, however, appear to me to be ten-jointed, and the two basal joints to be stout, the third to the seventh to be very short, the three last forming an elongate lax club.

The tarsi are four-jointed, almost linear, very similar to those of *Rhymbus*.

1. ENDOCELUS ORBICULARIS.

Rotundatus, ferrugineus; elytris convexis, fortiter parce punctatis, setulosis, marginibus latius explanatis, apice subacuminato; thoracis margine elevato deplanato, basi sulcis duobus punctiformibus. Antennarum clava fusca. Long. 1½ millim.

Hab. Ceylon (Lewis).

Orbicular, elytra subglobularly convex, with their lateral margin much expanded in the middle, but the widened rim vanishing in the apex, where they are conjointly deflexed and acuminate; their disk is evenly and strongly punctured, the margins less distinctly; the extreme limb of the expanded margin is itself finely reflexed. The head is exserted, with small prominent coarsely granulated eyes. The maxillary palpi have their apical joint subulate. The thorax is short, narrowed in front, with the margin raised, thickened and flattened as in *Stenotarsus*, the front angles being rounded in to form the emarginate opening for the head, than which it is much wider; the base is narrower than the elytra at their base, and is furnished with two very deeply impressed punctiform sulci, which are about halfway between the centre and the hind angle, on each side. One specimen, taken at Dickoya.

EXPLANATION OF PLATE XVII.

- Fig. 1. *Cymones cowani*, p. 158.
2. *Panomæa cingalensis*, p. 162.
3. *Cymones helopioides*, p. 158.
4. — *sharpi*, p. 157.
5. *Spathomeles? inflatus*, p. 154.
6. *Stictomela chrysomeloides*, p. 156.
7. *Epopterus lineoguttatus*, p. 161.
8. — *ephippiger*, p. 160.
9. — *eganus*, p. 160.

2. On the so-called Pelvisternum of certain Vertebrates. By
R. J. ANDERSON, M.D., M.A., Professor of Natural
History, Queen's College, Galway.

[Received March 1, 1886.]

Prof. Paul Albrecht in 1883 described¹ an interpubic bone which he found present in *Dasypus sexcinctus*, *Bradypus cuculliger*, and *Cholæpus didactylus*. He compares the symphyisial cartilage found in many animals and this bone with the parts of the sternum, shoulder-girdle, and os hyoides, and gives several very instructive and clear figures of specimens in the museums at Berlin and Königsberg. The figures of the Lacertilian pelvis are copied from the papers of Profs. Huxley and Wiedersheim, and the scheme of homology he represents in a table at the end of his note.

¹ Bull. d. l'Académie royale de Belgique, nos. 9-10.

PELVIC GIRDLE.

1. Pubis.
2. Ischium.
3. Ilium.
4. Subilium.
5. Wanting.
6. Wanting.
7. Pelvisternum.
(Ischio-pubic symphyseal cartilage. Osseous pelvisternum of Edentates.)
8. Hemi-pelvisternum.
9. Ischio-pubic symphysis.
10. Prepelvisternum.
11. Hemi-pelvisterna.
Epipelvic ossicles of Chameleons.
Marsupial bones of Monotremes and Marsupials.
12. Post-pelvisternum.
Os cloacæ of Lacertilians.

SHOULDER-GIRDLE.

1. Procoracoid.
2. Coracoid.
3. Scapula.
4. Subscapula.
5. Clavicle.
6. Interclavicle.
7. Omosternum.
Coraco-procoracoid symphyseal cartilage.
8. Hemi-omosternum.
9. Symphysis coraco-procoracoid.
10. Preomosternum.
Preomosterna of Anoura.
11. Hemi-preomosterna.
Substernal bones of mammals.
12. Post-omosternum.

The pelvis of *Lacerta muralis* is figured by Prof. Hoffmann in Bronn's 'Thierreichs,' and Brühl also gives figures of the Amphibian forms. In a specimen of *Iguana tuberculata* in this museum the pubis is a separate bone, and contains a preacetabular foramen as well as a well-marked supra- or prepubic notch. A copula (bone) reaches from the anterior part of the ischium to the pubis, wider behind than in front. The os cloacæ fits into the ischial symphysis behind, and the ischial symphysis still shows the marks of union with the tuberosities. The ilia articulate each with two transverse processes, and the traces of union with the ischium are obliterated.

In the Australian *Monitor gouldii* which we have, a prepubic nodule fits in between the pubes in front; all traces of union between the parts of the ossa innominata are obliterated. A small nodule is situated in front of the ischial symphysis, and a distinct os cloacæ is present behind, and, as in the *Iguana*, fits in between the ischia. A prominent ischial spine behind is situated at the junction of the middle and outer third of the posterior border of that bone. In *Lacerta viridis* a prepubic nodule and a postischial are present. In the West-Australian *Moloch horridus* (marked 1845 in the catalogue) the postischial bone is quite evident, and a large copula runs forwards to the pelvis. In our Chameleon the three pelvic bones are short, and the os cloacæ seems to be cartilaginous; the ischio-pubic copula is reduced to a thread-like structure. The os cloacæ and prepubic bone are thin in our specimen of *Ameiva*, but they are very distinct.

Prof. Owen, in his 'Anatomy,' says that in the Potoroo there is a triangular ossicle developed at an early period, which is wedged into the posterior interspace of the ischio-pubic symphysis; and in his paper in this Society's 'Transactions' he figures the posterior epiphysal bone. In the skeleton of a Kangaroo in our museum the following measurements were made:—

	millim.
Length of ilium	140
Crest	20
Breadth opposite the acetabulum	35
Length of pubis	55
Interpubic bone, antero-posterior diameter	15
" " breadth of one side	35

In *Phacochoerus* the bone occupies the position of the triangular ligament in man, and is three-cornered and wedge-like. The following measurements were made :—

	millim.
Length of os innominatum	250
Crest	120
Breadth of ilium above acetabulum	32
" " at acetabulum	70
" " below acetabulum	34
Arch of pubis	75
Interpubic bone, breadth	24
" " superior depth	15
" " inferior depth	30
" " thickness at base	20

In the skeleton of the Beaver the bone is not so distinct as in *Phacochoerus*. The following are the measurements :—

	millim.
Length of os innominatum	160
Crest	30
Breadth opposite acetabulum	35
Arch of pubis	75
Depth of pubic bone	9
Breadth of one half	25

I do not find the bone present in any other mammalian skeletons that I have examined. The bone occupies the position of the triangular ligament and the os cloacæ of Lacertilians. Ligaments and fasciæ are so often the seat of ossifications, and bones in one set of animals are so often represented by ligaments in another set, that one is almost tempted to regard the bones above referred to as, in whole or in part, homologous with the triangular ligament of the urethra found in the higher animals.

The interpubic bone in *Bradypus* is mentioned by Prof. Flower in his 'Osteology.'

3. Note on *Bipalium kewense*, and the Generic Characters of Land-Planarians. By Professor F. JEFFREY BELL, M.A., Sec. R.M.S.

[Received March 16, 1886.]

(Plate XVIII.)

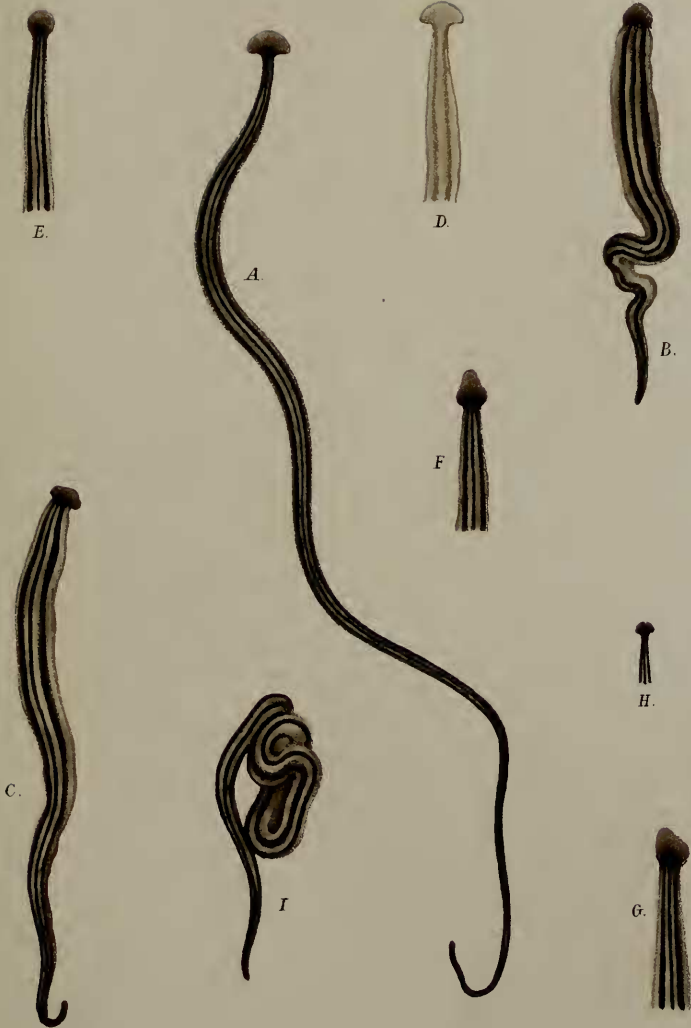
In the descriptions given by writers on Land-Planarians especial attention is always directed to the form of the head or, as more than one author has called it, the tail. This, no doubt, is partly due to the fact that in a number of the species the head is often seen to have a remarkable hammer-shaped or cheese-knife form, which has three times led to the institution of a genus for the reception of such species. In other cases, where the worm has been assigned to other genera, the head is described as obtusely rounded, or as not sharply distinguished from the body.

Having lately received from Mr. Osbert Salvin, F.R.S., a specimen of a Land-Planarian (apparently *Bipalium kewense*, Moseley), found by him among broken flower-pots in his garden in Sussex, of the origin of which nothing definite is known, I have been enabled to watch the creature exhibiting its activity. I had not long been studying it when I noted that the head varied considerably and almost constantly in form, so that I thought it well to at once enlist the skilful pencil of Mr. C. Berjeau to represent its various appearances.

Figure A represents the worm, not indeed at its greatest length, but in a position which it is apt to assume when in full activity; the head is carried a little higher than the rest of the body, its edges are sharp, its contour convex, and it is well marked off from the rest of the body. Figure B, on the other hand, shows the animal in a state of torpid quiescence; the head is now contracted, obtusely pointed, only separated by a shallow depression on either side from the surrounding region of the body. Fig. C shows an intermediate condition between A and B. Figs. D-G show various stages in the form of the head¹—hammer-shaped, knob-like, tongue-shaped, or altogether irregular. The body may be not more than 2 inches long, when the creature looks like a leech or a slug, or it may extend itself to 6 inches and even more, when it has rather the appearance of a thread-worm. In fact, as one looks at it extended on a white dish, it calls to mind the *Amoeba* more than any other animal known to the zoologist.

I insist on the variations in the form of the body, and especially of the head, because all writers (even those who, like M. Humbert, Prof. Moseley, or, the latest of all, Dr. J. C. C. Loman, have had the opportunity of examining these forms alive or under natural conditions) direct, in their descriptions, especial attention to the form of the head; indeed, land-planarians with cheese-cutter or hammer-shaped heads (*cf.* figs. A and D) have been by all naturalists

¹ All the figures are of the natural size.



Berjeau & Highley del et lith.

Mintern Bros. imp.

BIPALIUM KEWENSE.
IN VARIOUS STAGES OF CONTRACTION.

assigned to the genus *Bipalium*¹. The only writer who seems to have remarked the variability in the form of the head is M. Humbert, who figures² the head of *Bipalium diana*, as living and when it is greatly contracted; the differences are, however, quite slight as compared with those in the figures now given (Plate XVIII.). Moreover, M. Humbert continues to use the form of the head as a distinctive character, and seems to have only incompletely appreciated the moral of what he saw. Referring to the paper of Prof. Perceval Wright, M. Humbert says:—"Il donne une figure . . . qui représente l'extrémité antérieure semilunaire et a du évidemment être faite d'après un individu conservé dans l'alcool, tandis que celle de la *D. grayia* a été dessinée d'après le vivant. C'est sans doute à ces deux manières d'observer, encore plus qu'à des particularités spécifiques qu'il faut attribuer les différences profondes que l'on remarque dans la forme des extrémités antérieures de ces deux espèces." But the differences shown in Prof. Wright's woodcuts of the two species are not as "profound" as those seen in the figures of the single living specimen here reproduced. So that, though M. Humbert recognized the difference between living heads and heads preserved in spirit, he does not seem to have recognized what is much more important—that the form of the head varies constantly during life.

If a Planarian in a torpid condition (Pl. XVIII. fig. I) be then and there seized and put into spirit, it will be found, no doubt, to have an obtusely blunted head, hardly wider than the body³; on the other hand, some, at any rate, if killed while in full activity, will be found to have heads shaped like a cheese-cutter or some modification thereof.

Hab. Mr. Salvin has lately received orchids from S. America and S. Mexico, and from Burma; but he has also had specimens from Kew Gardens, whence the originals came to Mr. Moseley.

In 1883 Dr. Günther received some specimens from Welbeck Abbey⁴, where they had been known for three or four years previously; Mr. Thiselton Dyer tells me that there is no history of any communication between the gardens at that place and Kew, and adds "we have probably therefore been stocked from a common source." A specimen found in a greenhouse in Clapham Park was sent to Dr. W. M. Ord, and is now in the possession of Prof. Ray Lankester; the early history of this specimen is unknown. In the hope of being able to extend our knowledge of this worm, I have written a note to the editor of the 'Gardener's Chronicle'⁵, which may result in some further information, and perhaps in the discovery of fresh examples

¹ The French translator of the latest authoritative work on General Zoology by converting "Kopftheil durch Lappen-Vorsätze halbmondformig" into "Région céphalique en croissant par la présence de deux appendices lobés," shows that he too regards the lateral parts of the head as being constant in form and position; nevertheless they are not so.

² Mém. Soc. Genève, xvi. p. 303, figs. 1, 1 a.

³ Fig. H in Plate XVIII. shows the form of the head in the specimen under description, now that it is dead and preserved in spirit.

⁴ See his letter in the 'Gardener's Chronicle,' xix. (1883) p. 415.

⁵ Published on March 13th, 1886.

and new localities¹. I am inclined to think that such information will support Dr. Günther's supposition that the worm has become acclimatized in this country; Mr. Dyer tells me that it is still to be found in the Kew hothouses, where it has now lived since at any rate the beginning of 1878.

Prof. Moseley was able to observe in Ceylon that *Bipalium* suspends itself by the tough slime which it secretes. My specimen had no opportunity of showing if it could so support itself; but I noticed that minute offending objects could be got rid of by being entangled in the slime which it secreted, and which, being gradually secreted from a point, say, one inch behind the head forwards, was as a continuous sheet of mucus thrown off from the anterior end. A small earthworm which was placed near it, but which was not attacked, had the same mucous sheet thrown over it, to its obvious embarrassment.

There can be no doubt as to the sensitiveness of *Bipalium* to light. The specimen now under notice was sent by Mr. Salvin on February 7th, lived and was more or less active till February 26th; for this interval of time the town was either enveloped in fog, or surrounded by a darkness which needed not to be called back to our recollection.

But on the 26th of February the sun shone, and though the room in which the Planarian had been placed was not illuminated by its rays, yet the exposure to diffuse light, which on other and earlier days had been harmless, was on this day fatal; the worm broke transversely into three pieces, and on being touched fell into four. Had it been kept in darkness it is possible it might have lived longer. The temperature of the room varied from about 50° to 64° F.

DESCRIPTION OF PLATE XVIII.

Illustrating the various forms assumed by *Bipalium kewense*.

A. Extended and moving freely. B, C. In various states of contraction. D-G. Some of the various forms taken by the head. H. Head and anterior end after contraction in spirit. I. The worm coiled and at rest.

All the figures are of the natural size.

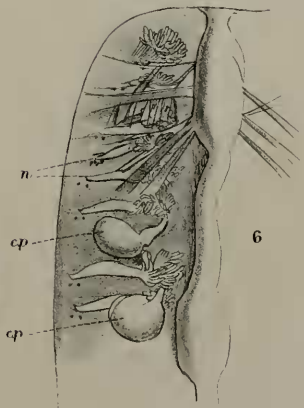
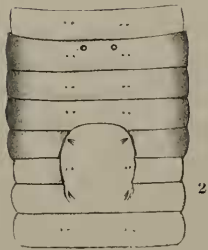
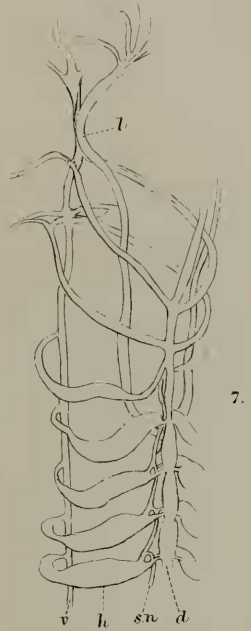
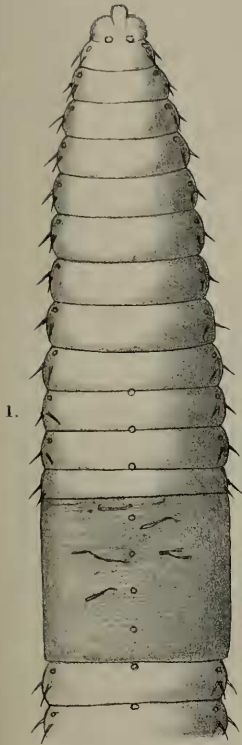
4. Note on the Structure of a large Species of Earthworm from New Caledonia. By FRANK E. BEDDARD, M.A., F.R.S.E., Prosector to the Society.

[Received March 15, 1886.]

(Plate XIX.)

Among a number of Earthworms forwarded to me from New Caledonia, through the kindness of Mr. E. L. Layard, F.Z.S., H.B.M. Consul at Noumea, were six specimens of a large worm several of which measured some 28 inches in length. All these specimens are referable to the same species, which belongs to the genus *Acantho-*

¹ Specimens have been found in the Zoological Society's Gardens, which have, and in gardens at Liverpool which have not had direct relations with Kew.



*drilus*¹. This genus is already known to inhabit New Caledonia; M. Perrier has described two distinct species from that region. The species which forms the subject of the present communication may be identical with one or other of these. The descriptions given by M. Perrier of *Acanthodrilus obtusus* and *A. angulatus* are necessarily insufficient, owing to the poor condition and immaturity of the specimens at his disposal; but certain facts, such as the position of the generative apertures and of the clitellum, could hardly be mistaken even in specimens greatly injured through bad preservation; in these points the present species differs from both of those described by Perrier, as will be apparent from the following notes on its structure.

External Characters.—I have sketched (Plate XIX. fig. 1) the anterior segments of the body from the dorsal aspect to indicate the main external features which are visible upon that surface. The buccal lobe divides the first segment², as also in *A. dissimilis* and *A. novæ zelandiæ*, two species recently described by myself³. Of a fourth species of the genus, viz. *A. verticillatus*, M. Perrier writes⁴:—“La lobe céphalique n’entame pas le premier anneau et paraît au contraire s’élargir à sa base de manière à ressembler à la partie supérieure d’un trèfle; mais cette apparence tient peut-être à un état particulier de conservation.” I mention these facts because the genus *Lumbricus* has been split up into other genera mainly on this account. It does not appear to me advisable, while there are so many internal structural differences, to make use of so small an external character for classificatory purposes; but in the case of the genus *Acanthodrilus* this mark of difference between species appears to be correlated with other differences of structure, inasmuch as M. Perrier hesitates to include *A. verticillatus* in the same genus with *A. obtusus*; the male generative pores in the former species are upon the 17th and 18th segments and are not separated by an intercalated segment as in the latter and all the other species of the genus at present known. On either side of the buccal lobe, and consequently between the first and second segments of the body, is a single pore; these may perhaps correspond to the single median dorsal pore which is the only orifice of the kind found in the *Oligochæta limicolæ*.

The *clitellum* was fully developed in several specimens, and extended from the 13th to the 17th segments inclusive, with the exception of a portion of the 13th segment; the glandular tissue composing the clitellum was only visible on the posterior half of that segment; the clitellum extends occasionally for a short distance on to the 18th segment. The anterior region of the clitellum down to the 15th segment completely encircles the body; the 17th and 18th segments, on the contrary, have a very considerable median area upon which there is no glandular development; the lateral margins of this

¹ Perrier, “Recherches pour servir à l’histoire des Lombriciens terrestres,” *Nouv. Arch. d. Muséum*, t. viii. (1872) p. 85.

² I have reckoned the first seta-bearing segment as the second segment of the body, in common with the majority of naturalists who have studied this group.

³ P. Z. S. 1885, p. 813.

⁴ *Loc. cit.* p. 93.